

ABSTRACT

An electrical system includes a solid state relay
5 (1) and an electrical connector (2) that connects solid
state relay (1) to a load (4). The solid state relay
(1) includes a power MOSFET (Q1) for switching power to
the load (4). A PNP transistor (Q2) monitors the
10 voltage drop across the power MOSFET (Q1), and shuts the
power MOSFET off when the voltage drop exceeds a
reference level. The solid state relay circuitry floats
when the power MOSFET is commanded OFF so there is no
leakage to ground. The relay (1) can be used with an
15 electrical connector that includes a short pin (34) or
shunt (16) that is disconnected before male and female
terminals (12, 22) are unmated. Disconnection of the
shunt (16) or the short pin (34) causes the power MOSFET
to be commanded OFF so that there is no current flowing
20 through the male and female terminals (12, 22) when they
reach an arc susceptible position. The solid state
relay (1) and the connector (2) are suitable for use in
a 42 Volt automotive electrical system.

25